Naval Mission Planning Systems
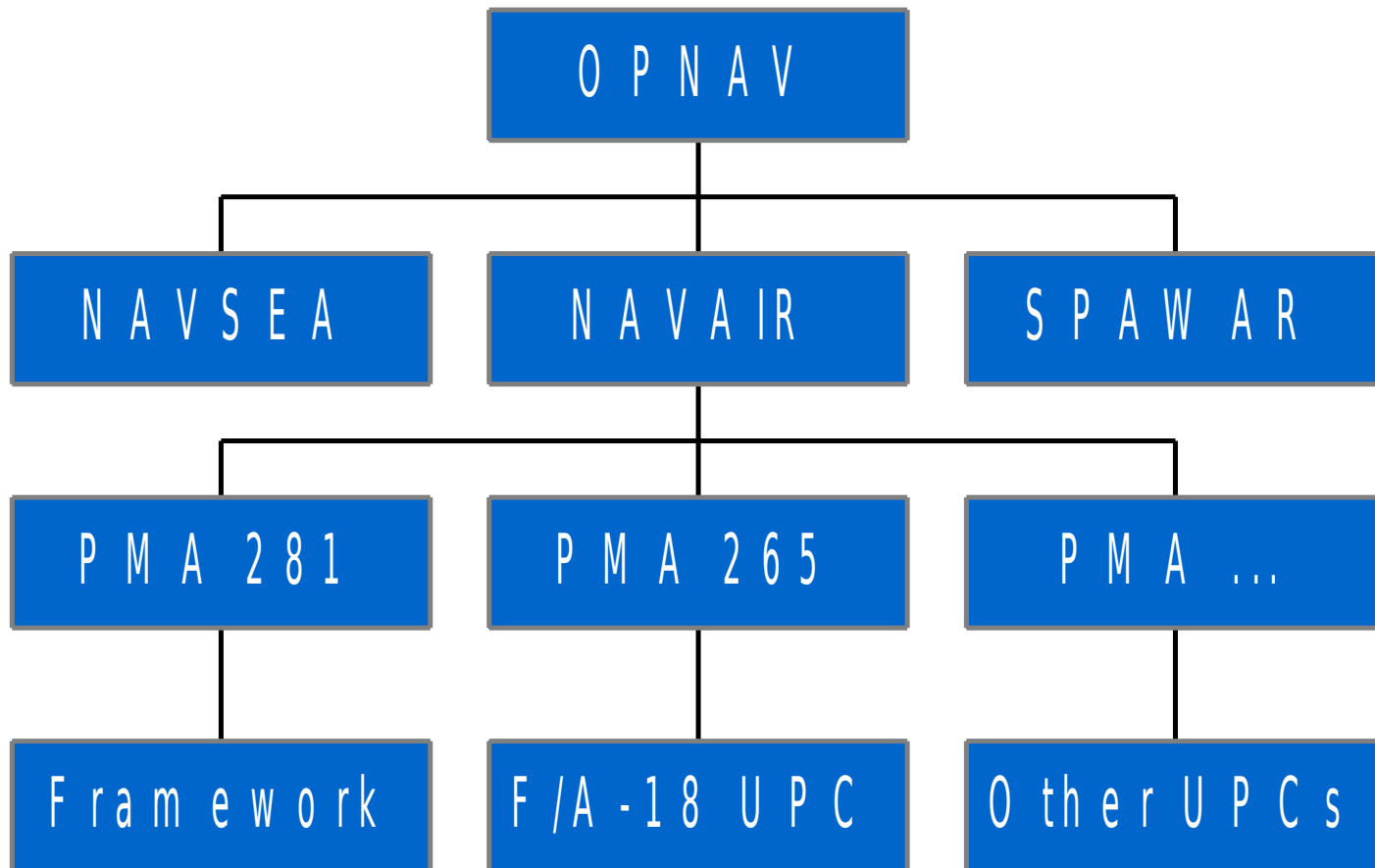
Briefer: Allison Fairell
Date: 9 Aug 04

NavMPS Outline

- PMA-281 Organization
- Family of Systems
- Our Present
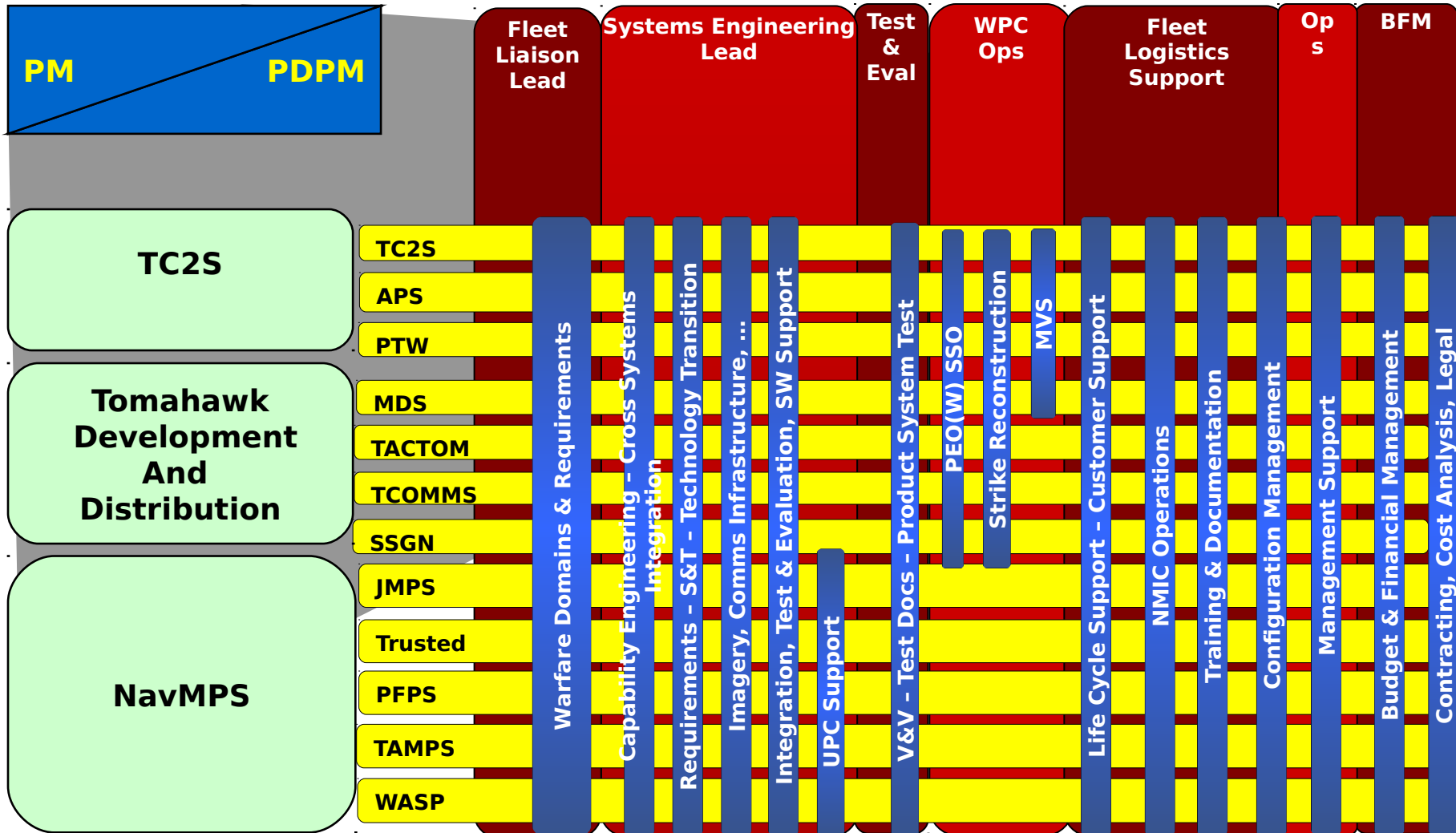- Future
- MPE Approach
- Schedules
- Navy SEIC Strategy

Naval Aviation Mission Planning

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                        ┌──────────────┐
                        │    OPNAV     │
                        └──────────────┘
              ┌────────────────┼────────────────┐
      ┌──────────────┐  ┌──────────────┐  ┌──────────────┐
      │   NAVSEA     │  │   NAVAIR     │  │   SPAWAR     │
      └──────────────┘  └──────────────┘  └──────────────┘
              ┌────────────────┼────────────────┐
      ┌──────────────┐  ┌──────────────┐  ┌──────────────┐
      │   PMA 281    │  │   PMA 265    │  │   PMA ...    │
      └──────────────┘  └──────────────┘  └──────────────┘
              │                │                │
      ┌──────────────┐  ┌──────────────┐  ┌──────────────┐
      │  Framework   │  │  F/A-18 UPC  │  │  Other UPCs  │
      └──────────────┘  └──────────────┘  └──────────────┘
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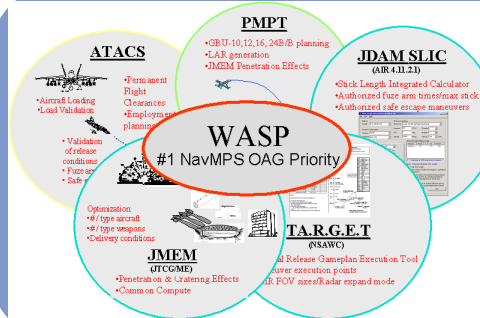
Organization PMA281

	Fleet Liaison Lead	Systems Engineering Lead			Test & Eval	WPC Ops			Fleet Logistics Support				Ops	BFM

PM / PDPM

TC2S
- TC2S
- APS
- PTW

Tomahawk Development And Distribution
- MDS
- TACTOM
- TCOMMS
- SSGN

NavMPS
- JMPS
- Trusted
- PFPS
- TAMPS
- WASP

Column headers (vertical):
- Warfare Domains & Requirements
- Capability Engineering – Cross Systems Integration
- Requirements – S&T – Technology Transition
- Imagery, Comms Infrastructure, …
- Integration, Test & Evaluation, SW Support
- UPC Support
- V&V – Test Docs – Product System Test
- PEO(W) SSO
- Strike Reconstruction
- MVS
- Life Cycle Support – Customer Support
- NMIC Operations
- Training & Documentation
- Configuration Management
- Management Support
- Budget & Financial Management
- Contracting, Cost Analysis, Legal

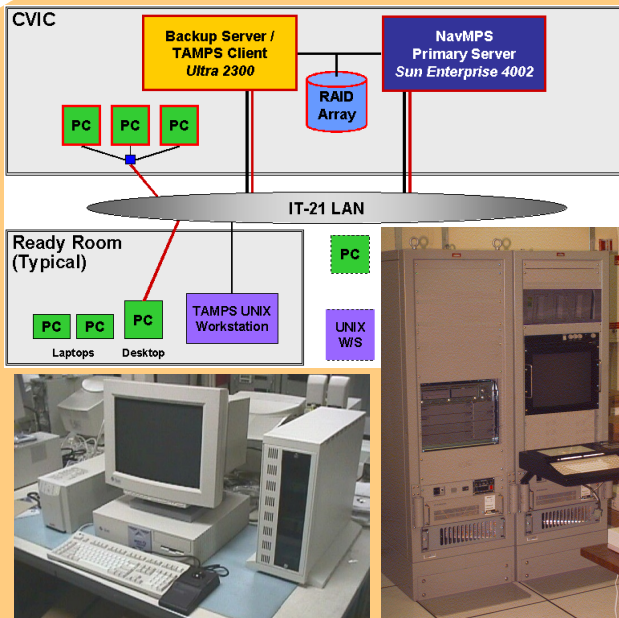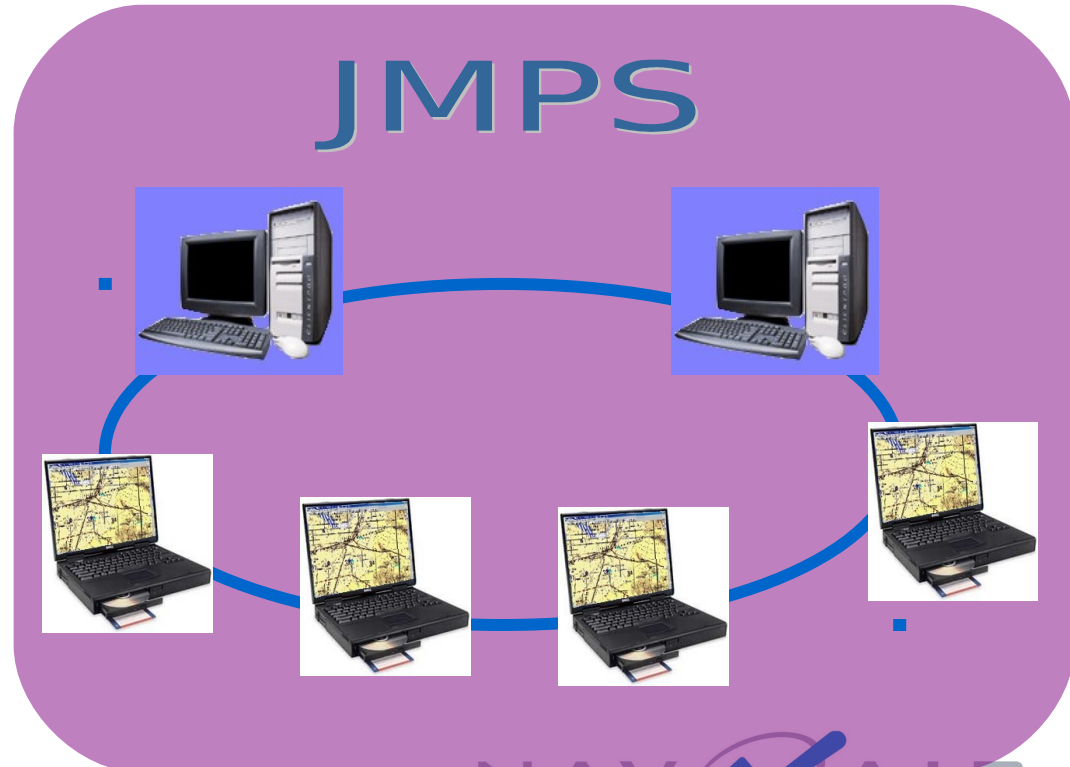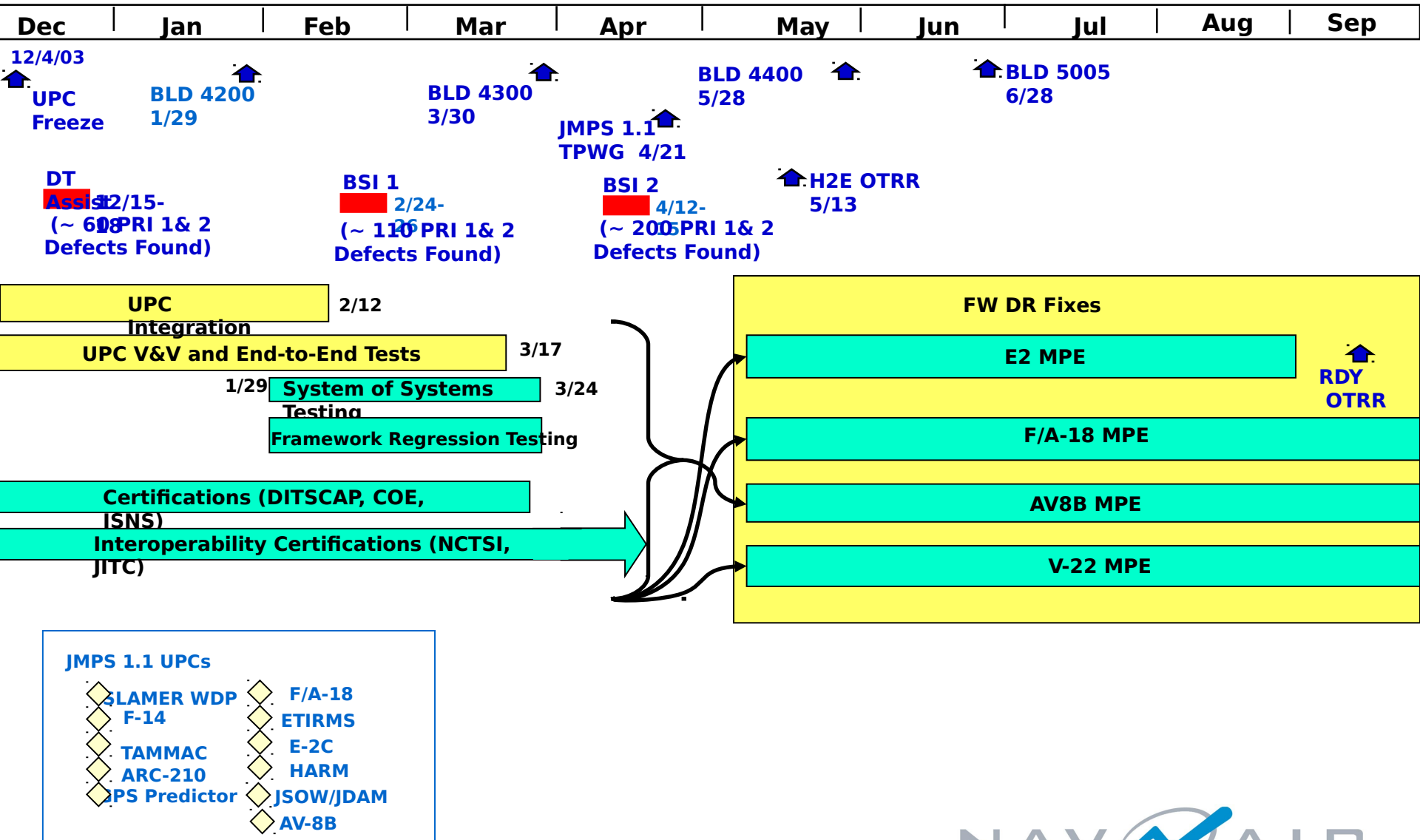# NavMPS Family of Systems

Lessons Learned

- Schedule driven by multiple programs
- No management structure to enforce system performance thresholds
- Worked towards the "Big Bang" theory for release
  - F/A-18 vs E2C
  - HW Configurations (client/server vs workgroup)
  - Testing (milestones vs continual/iterative)
- No centralized system integrator
  - Struggled with no system-wide problem report DB
  - No insight into system problems/maturity
  - Trusted UPCs, but did not verify

JMPS 1.1 Development Schedule

Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep

12/4/03
UPC Freeze

BLD 4200 1/29

BLD 4300 3/30

JMPS 1.1 TPWG 4/21

BLD 4400 5/28

BLD 5005 6/28

DT Assist 12/15-1/8
(~ 60 PRI 1& 2 Defects Found)

BSI 1 2/24-26
(~ 110 PRI 1& 2 Defects Found)

BSI 2 4/12-16
(~ 200 PRI 1& 2 Defects Found)

H2E OTRR 5/13

UPC Integration 2/12

UPC V&V and End-to-End Tests 3/17

1/29 **System of Systems Testing** 3/24

Framework Regression Testing

Certifications (DITSCAP, COE, ISNS)

Interoperability Certifications (NCTSI, JITC)

FW DR Fixes

E2 MPE

RDY OTRR

F/A-18 MPE

AV8B MPE

V-22 MPE

JMPS 1.1 UPCs

- SLAMER WDP
- F-14
- TAMMAC
- ARC-210
- JPS Predictor
- F/A-18
- ETIRMS
- E-2C
- HARM
- JSOW/JDAM
- AV-8B

Mission **P**lanning **E**nvironment

F/A-18 JMPS MPE

UPCs
Common
Capabilities
Framework

| F/A-18 UPC |
| SLAM |
| HARM |
| Strike Plan Folders |
| TAMMAC |
| ARC-210 |
| WASP |
| JSOW/JDAM |
| GPS Prediction |
| PET |
| GPS Crypto Key |
| Intel Planning. |
| JTIDS Init |
| Autorouter |
| Mission Rehearsal |
| Collaboration |
| GPS Almanac |
| Framework 1.1 |
| Framework 1.0 |

PMA-201

ESC (USAF) Hill AFB

PMA-281 NGIT

PMA-265 Boeing

PMA-258 Boeing

PMA-242

PMA-281

PMA-209 Raytheon

PMA-281 DCS, PRB

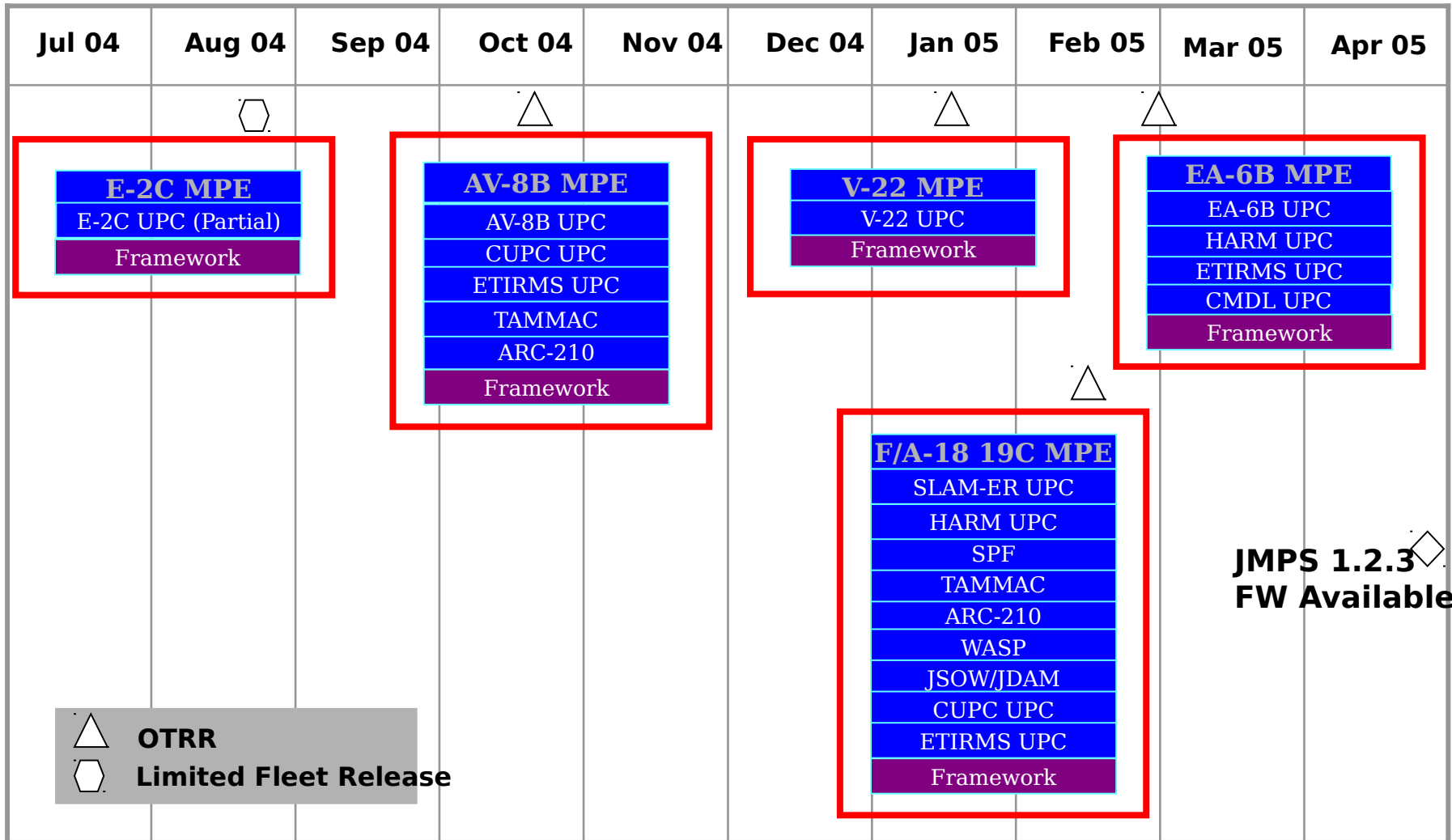**PMA-281 Tybrin**

Building Block Software

Mission Planning Environment Approach

- Manage by MPEs
  - Facilitate spiral releases of MPEs
  - Manage anomalies at the system level
- Iterative MPE performance tests
  - Test in a centralized operationally representative test environment
- Continual user involvement required
  - Improved DT/OT teaming
- Changes managed by MPE
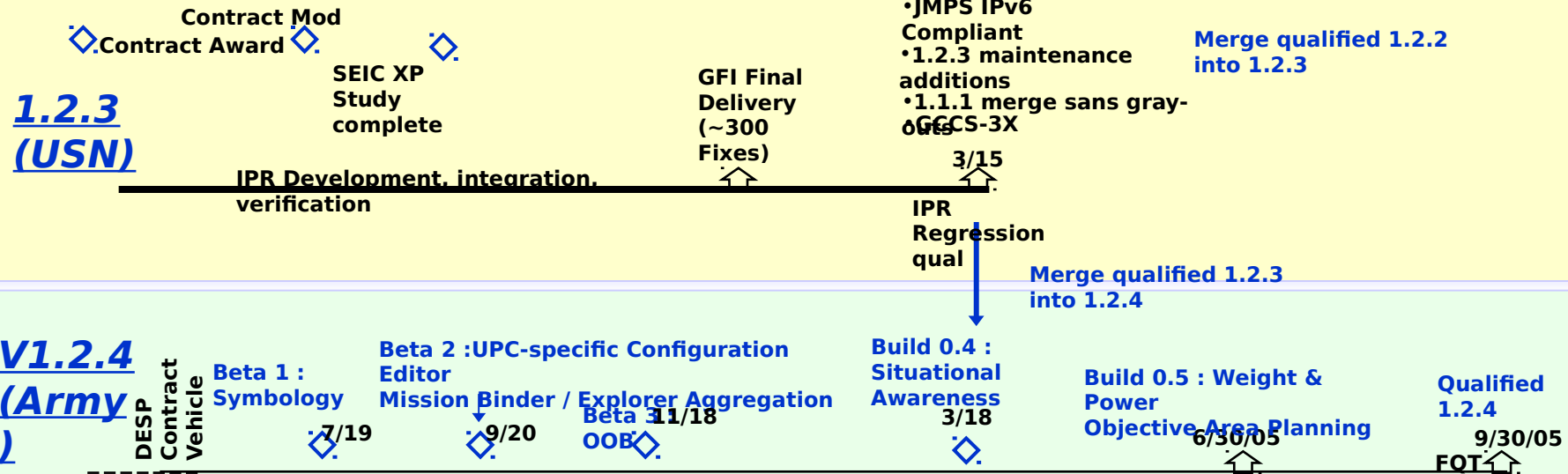- MPE documented requirements (FRD process)

MPE Definition and Schedule

Jul 04	Aug 04	Sep 04	Oct 04	Nov 04	Dec 04	Jan 05	Feb 05	Mar 05	Apr 05

E-2C MPE
- E-2C UPC (Partial)
- Framework

AV-8B MPE
- AV-8B UPC
- CUPC UPC
- ETIRMS UPC
- TAMMAC
- ARC-210
- Framework

V-22 MPE
- V-22 UPC
- Framework

EA-6B MPE
- EA-6B UPC
- HARM UPC
- ETIRMS UPC
- CMDL UPC
- Framework

F/A-18 19C MPE
- SLAM-ER UPC
- HARM UPC
- SPF
- TAMMAC
- ARC-210
- WASP
- JSOW/JDAM
- CUPC UPC
- ETIRMS UPC
- Framework

JMPS 1.2.3 FW Available

△ OTRR

⬡ Limited Fleet Release

JMPS 1.2.3 & 1.2.4 Framework Schedules

2004																			
Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov

1.2.3 (USN)

Contract Award

Contract Mod

SEIC XP Study complete

GFI Final Delivery (~300 Fixes)

•**JMPS IPv6 Compliant**
•**1.2.3 maintenance additions**
•**1.1.1 merge sans gray-outs GCCS-3X**

3/15

Merge qualified 1.2.2 into 1.2.3

IPR Development, integration, verification

IPR Regression qual

Merge qualified 1.2.3 into 1.2.4

V1.2.4 (Army)

DESP Contract Vehicle

Beta 1 : Symbology
7/19

Beta 2 :UPC-specific Configuration Editor
Mission Binder / Explorer Aggregation
9/20

Beta 3 OOB **11/18**

Build 0.4 : Situational Awareness
3/18

Build 0.5 : Weight & Power
Objective Area Planning
6/30/05

Qualified 1.2.4
9/30/05
FQT

Air Force Business Strategy

Gov't

Mission Planning Enterprise Contract (MPEC)

Multiple Awd ID/IQ pool

Associate Contract Agreements (ACAs)

Sys Eng & Integration Contractor

System Engineering Integration Contract (SEIC)

MPEC

- JMPS Development
- Legacy System Upgrades
- Design Components
- Software Programming – "Code Bending"
- OSS&E (e.g. Config Mgmt)
- Risk Planning & Mitigation
- Vertical Component and Integration Testing
- Technology Insertion & Prototyping
- Initial Training

Govt

- Program Management
- Increment Management
- Lead Functionals
- Requirements Management
- Risk Management
- OSS&E Accountability
- Sets Test Objectives
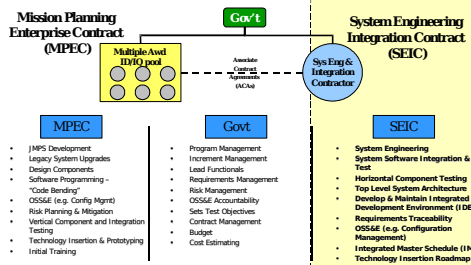- Contract Management
- Budget
- Cost Estimating

SEIC

- **System Engineering**
- **System Software Integration & Test**
- **Horizontal Component Testing**
- **Top Level System Architecture**
- **Develop & Maintain Integrated Development Environment (IDE)**
- **Requirements Traceability**
- **OSS&E (e.g. Configuration Management)**
- **Integrated Master Schedule (IMS)**
- **Technology Insertion Roadmap**

Navy SEIC Business Strategy

System Engineering Integration Contract (SEIC)

Sys Eng & Integration Contractor

SEIC

- **System Engineering**
- **System Software Integration & Test**
- **Horizontal Component Testing**
- **Top Level System Architecture**
- **Develop & Maintain Integrated Development Environment (IDE)**
- **Requirements Traceability**
- **OSS&E (e.g. Configuration Management)**
- **Integrated Master Schedule (IMS)**
- **Technology Insertion Roadmap**

Keeping Options Open

Questions